



Comments to FCC Public Notice regarding AU Docket No. 18-85

AUCTIONS OF UPPER MICROWAVE FLEXIBLE USE LICENSES FOR
NEXT-GENERATION WIRELESS SERVICES COMMENT SOUGHT ON COMPETITIVE BIDDING
PROCEDURES FOR

AUCTIONS 101 (28 GHz) AND 102 (24 GHz) BIDDING IN AUCTION 101

Company Overview

CCS (Cambridge Communication Systems) is the creator of Metnet – the world’s only self-organizing mmWave backhaul and access solution for small-cell, public WiFi, fixed wireless access (FWA), DSLAM, and CCTV applications. CCS pioneered the concept of a zero frequency planning interference aware self-organizing mesh, operating in the 24GHz, 26GHz and 28GHz licensed bands. The emphasis is on delivering on both high capacity, low latency system links with discreet nodes that can be mounted at street level and rooftop in dense and suburban areas with little, if any planning issues. Metnet’s proven capability is trusted at the heart of some of the world’s most demanding and data-heavy networks, including a pre-5G network for Telefonica O2 in London, at the heart of the world’s largest financial center. In major live deployments from Asia to North America, Metnet is powering networks to mmWave 5G performance.

Auction interest

CCS Metnet operates in both 24 and 28GHz bands and is FCC approved for operation in North America.

Metnet provides the ability for a variety of operators and service providers to cost effectively offer applications and services over a resilient carrier grade microwave mesh operating in licensed spectrum. This allows those same entities to offer high availability and high QoS fiber-like service at a fraction of the cost of rolling out traditional fiber.

CCS’s interest in the upcoming auctions centers on the public interest benefits that will accrue when:

- a) Operators, service providers and Customers have access to licensed mmWave bands¹
- b) Regarding Auction 102 (24GHz) and consistent with previous spectrum auctions, CCS believes build out requirements should be imposed on winning bidders. CCS believe these build out requirements should also be designed to encourage companies to use allocated spectrum in meaningful commercial deployments

¹ In supporting the US market, CCS has found that limited access to licensed bands has slowed mmWave deployments in the USA. This both slows the development and introduction of innovative disruptive technology like CCS Metnet which in turn prevents the closing of the digital divide between the affluent haves and the less affluent have not’s in deploying next generation services to end users and customers. Support for this position can be found in the statement from Commissioner Carr’s that

“The FCC’s forward-leaning approach to 5G benefits everyday Americans. (it is) about enabling the next-generation of innovation and entrepreneurship in America.”

- c) Accepted bids in the 24GHz band should be limited to companies without accessible 28GHz spectrum. Companies with access to 28GHz spectrum presently should be prevented from consuming additional assets at 24GHz
- d) Access to these bands via these auctions should be competitive, affordable and not limited to a small group of already spectrum rich nationwide providers²
- e) The commission should continue in the future to expand and widen the bands offered for auction³

Vendor companies like CCS, consider themselves one of these affected companies who need clarity on bands as soon as it is available.

Accordingly, CCS supports and applauds efforts by the commission to hold auctions in the 24GHz and 28GHz band and would like to provide additional comments rooted in feedback from its customer experience.

² CCS notes that the current allocations of licensed bands have coalesced around a small few nationwide companies, limiting access to smaller operators and service providers. CCS also notes and agrees with the Competitive Carrier Associations statement by CCA President & CEO Steven K. Berry given on April 11 2018 when he said,

“Ensuring competitive carriers have a meaningful opportunity to acquire additional spectrum resources is particularly important, especially in light of the recent Verizon/Straight Path and AT&T/FiberTower transactions, which placed enormous swaths of valuable spectrum into the hands of the largest national carriers. Consumers, industry and the economy all benefit from a competitive playing field, and all carriers should be afforded an opportunity to access 5G spectrum at auction.”

CCS believes that providing the ability to access spectrum to a variety of non-Tier 1 operators will increase broadband connectivity to the end user, spur innovation and create demand.

³ CCS also believes that access to publishing of an auction timetable of additional bands outside of 24 and 28GHz benefits its customers. CCS Agrees with Commissioner O’Reilly’s statement that

“.....(the FCC) need to create an auction timetable for the other bands coming down the pipeline. Affected industry needs to know as soon as possible when they will need the resources to participate in what is turning into a necessary ingredient in 5G services.”

Comments Submission

Based on our interest and due to the feedback received from US based customers regarding the 24 and 28GHz bands and associate auctions, CCS respectfully submit our combined comments on Auction 101 and 102 to the commission for their review.

With that general background in mind, CCS offers the following responses to the Commission's proposals in the Auction Public Notice:

Title	Paragraph	Request	Reponses
Separate Auction Application and Bidding Processes	12	On the proposal to hold separate auctions using a standard SMR format and a clock auction and on whether the filing window for Auction 102 should occur prior to the close of bidding in Auction 101.	CCS agrees with this proposal and the commission's position to commence bidding in Auction 102 for 24 GHz band licenses subsequent to the close of bidding in Auction 101.
Separate Auction Application and Bidding Processes	13	Proposal on issues related to the timing of the proposed, separate application and bidding processes.	CCS agrees with this proposal
Application Requirements and Certifications Relating to Joint Bidding and Other Agreements	26	On the proposal to ensure competitive bidding rules in Auctions 101 and 102 by identifying AT&T, Sprint, T-Mobile, and Verizon Wireless as "nationwide providers"	CCS strongly agrees with this proposal
Application Requirements and Certifications Relating to Joint Bidding and Other Agreements	28	On the proposal to apply the prohibition against joint bidding agreements such that the "licenses being auctioned" and "licenses at auction" include all of the licenses being offered in Auctions 101 and 102	CCS agrees with this proposal
Bidding Credit Caps	29	On the Proposal to establish reasonable caps on the total amount of bidding credits that an	CCS strongly supports this proposal and agrees with the commission that it will

		eligible small business or rural service provider may be awarded for either Auction 101 or 102.	promote small business and rural service provider participation in auctions and in the provision of spectrum-based services.
Bidding Credit Caps	34	On the proposed caps and bidding credit in either auction	CCS Strongly supports the bidding credits and caps suggested by the commission. CCS Believes this will benefit of small and rural businesses and encourage participation in the auction
Simultaneous Multiple-Round Auction Design	42	Regarding Auction 101 – 28GHz - On the proposal to use Simultaneous Multiple-Round Auction Design	CCS agrees with this auction design and believe this is consistent with recent FCC spectrum auctions
Simultaneous Multiple-Round Auction Design	45	Regarding Auction 101- 28GHz – On the proposal that the Wireless Telecommunications Bureau would retain the discretion to change the bidding schedule	CCS agrees with the commission on WTB retaining the discretion to change the bidding schedule including the amount of time for bidding rounds, the amount of time between rounds, and the number of rounds per day, depending upon bidding activity and other factors. CCS has no further recommendation on this proposal.
Stopping Rules	46, 47 (Option 1-5) & 48	Regarding Auction 101- 28GHz – Stopping Rules	CCS agrees with this proposal and have no further recommendation on this proposal.
Information Relating to Auction Delay, Suspension, or Cancellation	49	Regarding Auction 101- 28GHz – Auction delay suspension or cancellation due to natural disaster, technical obstacle, network interruption, administrative or weather necessity, evidence of an auction security breach or unlawful bidding activity, or for any other reason that affects the fair and efficient conduct of competitive bidding	CCS agrees with this proposal and have no further recommendation on this proposal.
Upfront Payments and	50	Regarding Auction 101- 28GHz – On the proposal to institute upfront payments based on	CCS agrees with this proposal and consider this

Bidding Eligibility		\$0.001 per megahertz of bandwidth per population (per “MHz-pop”)	usual practice to prevent against frivolous or insincere bidding. CCS do request that it be clearly stated that the winning bidder amount owed would be calculated as Winning Bid minus Upfront payment
Upfront Payments and Bidding Eligibility	51	Regarding Auction 101- 28GHz – On the proposal to use the amount of the upfront payment submitted by a bidder to determine its initial bidding eligibility in bidding units, and assign each license a specific number of bidding units, equal to one bidding unit per dollar of the upfront payment	CCS agrees with this proposal under the provision that this does not favor larger entities or nationwide companies over rural operators, carriers, CLECs etc.
Activity Rule	53,54, 55 (option A&B), 56	Regarding Auction 101- 28GHz – On the Activity rule proposal where the bidders are required to be active on a specific percentage of their current bidding eligibility during each round of the auction.	CCS agrees with the Activity rule and agree with the commissions assertion that the rule ensure bidders bid actively throughout the auction, rather than wait until late in the auction before participating. CCS Agree also that Failure to maintain the requisite activity level should result in the use of an activity rule waiver, if any remain, or a reduction in the bidder’s eligibility, possibly curtailing or eliminating the bidder’s ability to place additional bids in the auction.
Activity Rule Waivers and Reducing Eligibility	57,58,59,60	Regarding Auction 101- 28GHz – And using Activity rule waivers as principally a mechanism for a bidder to avoid the loss of bidding eligibility in the event that exigent circumstances prevent it from bidding in a particular round.	CCS agrees with this proposal and believe this is consistent with recent FCC spectrum auctions
Reserve Price or Minimum Opening Bids	61,62,63, 64, 65	Regarding Auction 101- 28GHz – On the proposal to set a minimum opening bid (instead of aggregate reserved price), using a formula based on bandwidth and license area population at \$0.002 per MHz-pop.	CCS agrees with this proposal and believe this formula is consistent with recent FCC spectrum auctions

Minimum Acceptable Bid Amounts	67,68	Regarding Auction 101- 28GHz – The proposal to use a percentage of the provisionally winning bid used to establish the minimum acceptable bid amount (The use of an activity index at the end of each round)	CCS agrees with this proposal and believe this is consistent with recent FCC spectrum auctions
Additional Bid Amounts	67-68	Regarding Auction 101- 28GHz – The proposal to calculate the additional increment percentage at five percent initially.	CCS agrees with this proposal and believe this is consistent with recent FCC spectrum auctions
Bid Amount changes	70,71	Regarding Auction 101- 28GHz and the commission’s proposal that the Bureau would retain the discretion to change the minimum acceptable bid amounts, the additional bid amounts, the number of acceptable bid amounts, and the parameters of the formulas used to calculate minimum acceptable bid amounts and additional bid amounts if the Bureau determines that circumstances so dictate. Further, proposals that the Bureau retain the discretion to do so on a license-by-license basis.	CCS agrees with the Commission proposal as well as other provisions in Parara 70 and 71.
Bid Removal and Bid Withdrawal	75,76, 78,79	Regarding Auction 101- 28GHz and the commission’s proposal whereby the bidding system allows each bidder to remove any of the bids it placed in a round before the close of the round.	CCS agrees with this proposal
Clock Auction Design	80,81, 82,83	Regarding Auction 102- 24GHz and the proposal to use an ascending clock auction	CCS support the auction of 24GHz licenses using an ascending clock auction. CCS urges the commission ensure appropriate access to all blocks with appropriate access for smaller operators, companies and business.
Determining Categories of Generic Blocks for Bidding	87	Regarding Auction 102- 24GHz and the proposal to conduct bidding in two categories of generic blocks, corresponding to the two segments of the band, in the unencumbered PEAs during the clock phase of the auction. This includes the proposal on conducting bidding on an additional category or categories when a block in a PEA has less than 100 megahertz of bandwidth.	CCS believes that the minimum allocation that the commission should offer should be 100MHz blocks. Given the applications operators have expressed interest in, CCS believes that most bidders would be interested in 2x100MHz blocks in order to meet capacity demands with

			<p>sufficient bandwidth to allow multi-year growth.</p> <p>CCS believes the allocation of blocks less than 100MHz are impractical for delivering sufficient capacity and service.</p>
Bidding Rounds	88,89,90	Regarding Auction 102- 24GHz and the proposal to conduct sequential bidding rounds, release of the bidding schedule a week before the bidding, allowing bids via phone or internet, and allowing the bureau discretion to alter the time for or between bidding as well as the times of the day	CCS agrees with the commission's proposals on bidding rounds
Stopping Rule	91	Regarding Auction 102- 24GHz and the proposal under which all categories of licenses in all PEAs would remain available for bidding until the bidding stops on every category	CCS agrees with this proposal
Information Relating to Auction Delay, Suspension, or Cancellation	92	Regarding Auction 102- 24GHz – Auction delay suspension or cancellation due to natural disaster, technical obstacle, network interruption, administrative or weather necessity, evidence of an auction security breach or unlawful bidding activity, or for any other reason that affects the fair and efficient conduct of competitive bidding	CCS agrees with this proposal and have no further recommendation on this proposal.
Upfront Payments and Bidding Eligibility	93	Regarding Auction 102- 24GHz – On the proposal to institute upfront payments based on \$0.001 per megahertz of bandwidth per population (per “MHz-pop”)	CCS agrees with this proposal and consider this usual practice to prevent against frivolous or insincere bidding. CCS do request that it be clearly stated that the winning bidder amount owed would be calculated as Winning Bid minus Upfront payment
Upfront Payments and Bidding Eligibility	94,95	Regarding Auction 102- 24GHz – On the proposal to a) use the amount of the upfront payment submitted by a bidder to determine its initial bidding eligibility in bidding units and have this as a measure of bidder eligibility and bidding activity as well as b) to assign each PEA a specific number of bidding units, equal to one bidding unit per dollar of the upfront payment	CCS agrees with this proposal under in so far as the proposal does not favor larger entities or nationwide companies over rural operators, carriers, CLECs etc. Additionally, CCS agrees with allowing

		listed in Attachment A and c) allow the bidder to bid on multiple generic blocks.	multiple bid on generic blocks again, in so far as multiple blocks are not consumed by one large operator.
Upfront Payments and Bidding Eligibility	96	Regarding Auction 102- 24GHz – On the proposal to set a deadline for the submission of upfront payments that will occur after bidding in Auction 101 concludes even if the Auction 102 auction application window is scheduled to occur prior to the close of bidding in Auction 101.	CCS agrees with this proposal
Activity Rule, Activity Rule Waivers, and Reducing Eligibility	97,98,99, 100,101	Regarding Auction 102- 24GHz – On the proposal to use an activity rule to ensure bidders remain active throughout the auction ensuring the auction closes within a reasonable period and to have an activity window between 92-97% and not including activity waivers	CCS agrees with these proposals
Reserve Price or Minimum Opening Bids	103,104, 105,106	Regarding Auction 102- 24GHz – On the proposal of using minimum opening bids and the proposal to use a calculation based on \$0.002 per MHz-pop.	CCS agrees with this proposal and believe this formula is consistent with recent FCC spectrum auctions
Clock Price Increments	107,108	Regarding Auction 102- 24GHz – On the proposal that the auction system announce a clock price for the next round for each category. Also that in each specific PEA the commission manage increment increase by adding a fixed percentage increment (5-15%) to the price for the previous round.	CCS agrees with these proposals
Assignment Phase	126,127	Regarding Auction 102- 24GHz – On the proposal that winning bidders from the clock phase that have a preference for specific frequencies will have an opportunity to submit sealed bids for particular frequency blocks in a separate single assignment round for each particular PEA or group of PEAs, that the assignment phase be voluntary and that winners of multiple blocks be assigned contiguous blocks even without participating the assignment	CCS agrees with these proposals
Sequencing and Grouping of PEAs	128,129,130	Regarding Auction 102- 24GHz – On the proposals for sequencing assignment rounds, and the commission’s proposal to group PEAs for bidding under some circumstances within REAGs (Regional Economic Area Grouping)	CCS agrees with these proposals

Interim Withdrawal Payment Percentage	134,135	On the proposal that the interim bid withdrawal payment be 15 percent of the withdrawn bid and the withdrawal payment being equal to the difference between the amount of the withdrawn bid and the amount of the winning bid in the same or a subsequent auction and the commissions determinations of the level of the interim withdrawal payment in a particular auction	CCS agrees with these proposals
Additional Default Payment Percentage	138	On the proposal that for Auctions 101 and 102 an additional default payment of 15 percent of the relevant bid in addition to the Default Payment Percentage As outlined in Paragraph 136 and 137) be imposed on a winning bidder that defaults or is disqualified after the close of an auction	CCS agrees with this proposal

CCS Metnet: Solution overview

CCS supports the Commission's plans to move ahead quickly with the planned auctions of the 24 GHz and 28 GHz spectrum, because the technology is already available to fully exploit this spectrum resource. CCS' Metnet has been developed to overcome the challenges and trade-offs classic PtP and PtMP systems impose. It currently operates at 24 and 28 GHz in licensed, area-based spectrum that's widely available in most markets. The small form factor and single unit per location easily satisfies urban planning requirements. The node's unique self-organizing capability and wide 270-degree field of view enables plug-and-play installation in under 15 minutes, with no need for radio frequency planning or manual alignment. A unique multipoint-to-multipoint architecture with self-healing links offers higher availability and resilience. And the system is easy to scale as existing nodes will automatically re-organize and re-align as new ones are added. The system polls the network continually and automatically determines the optimal topology to deliver capacity where needed. Each cluster runs a Spatial-TDMA transmission schedule, which allows links to operate simultaneously to increase the overall capacity delivered to each site.

The CCS Metnet radios in the 24GHz band are well suited to the FCC's spectrum and channel arrangements. The radios cover the 24.25 to 26.5GHz band and are based on a dynamic TDD architecture utilizing a unique spatial TDMA protocol. Metnet radios can be configured with single or dual 100MHz channels to deliver up to 1Gbps capacity. CCS customers benefit from 5G features in mmWave bands with a significantly lower cost of entry and deployments than 5G FWA systems with large multi sector base station equipment and complex packet core network and processing requirements. CCS believes 5G mmWave technology can enable a new generation of low cost, high speed connectivity which should be accessible by a range of operators, competitive carriers, and new disruptive service providers.



Figure 1 - CCS 24/28GHz Metnet Node



Figure 2 - Low skilled 15 minute installation



Figure 3 - Small discreet radio for backhaul and access

CCS Metnet: Closing Statement

CCS supports and applauds the FCC in its attempt to provide additional spectrum via Public Auction.

Further CCS hopes the commission adopts measures and policies in that auction which ensure a fair and equitable distribution of spectrum and ensure that the spectrum not be allocated to larger operator who already own significant holdings of spectrum in the same or similar bands. CCS also requests that the FCC, in line with previous auctions, adopt built-out rules and policies to ensure the winning bidders use the spectrum and commence deploying commercial networks expeditiously.